Evolution of Protoplanetary Disks and the Formation of Planets: First Results from the Spitzer Space Telescope

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The Spitzer Space Telescope, formerly known as SIRTF, was launched in August 2003 and began normal operations this past December. Here we will illustrate the grasp of Spitzer and its Infrared Spectrograph[a] (IRS) instrument for protostellar, protoplanetary and debris-disk systems with a review of results from the first seven months of guaranteed-time observations of large samples of such objects. We will present, among other observations: evidence of planet formation in the disks around stars in Taurus only 1 Myr of age, and in general of evolution in the radial structure of disks in the 1-10 Myr range; evidence of evolution, especially thermal processing, in the size and composition of dust grains in 1–10 Myr-old disks; and evidence of ice-mantle growth and thermal processing in the envelopes surrounding the youngest stars (0.1–1 Myr).

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